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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/014,218

10/22/2001

Pingfan P. Wu

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11/03/2004

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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,218

Applicant(s)

WU ET AL.

Examiner

Shi K. Li

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2001 and 09 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 5-14, 17-21, 23-24 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (U.S. Patent Application Pub. 2002/0164125 A1) in view of Krol et al. (U.S. Patent 6,370,286 B1).

Regarding claims 1, 12, 23 and 27, Berger et al. discloses in FIG. 2 an apparatus for frequency tuning and locking. FIG. 2 comprises a tuning reference element 71, optical detector 82 and calculation device 73 for generating a tuning error signal to stabilize frequency of an optical source 24. Berger et al. teaches in paragraph [0035] that the tuning reference element includes a dispersive phase retarder and a polarizer. The difference between Berger et al. and the

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claimed invention is that Berger et al. does not teach to use a birefringent element as a phase retarder. However, it is well known in the art to use a birefringent element as a phase retarder. For example, Krol et al. teaches in FIG. 1 a birefringent element as a phase retarder (see col. 2, line 53-54). Where the claimed differences involve the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. See *In re Ruff*, 118, USPQ 343 (CCPA 1958). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use birefringent element as a phase retarder.

Regarding claim 2, Krol et al. teaches to use birefringent crystal as birefringent element.

Regarding claims 5-6, 13 and 17, Krol et al. suggests in FIG. 1 that the birefringent crystal should have an angle of 45° with the PBS1 and that the polarizer (PBS2) should have an angle of 45° with the birefringent.

Regarding claims 7-8, Krol et al. teaches in col. 4, lines 16-18 that the odd channels and even channels being out of phase by π (or a multiple of π).

Regarding claims 9 and 18, Krol et al. suggests in col. 2, lines 10-15 that the birefringent element has a period function.

Regarding claims 10-11, 14, 24 and 28, Berger et al. teaches in FIG. 2 a beam splitter 74 and second detector 106. The calculation device generates the tuning error signal in response to signals from the first detector and second detector.

Regarding claim 19, Berger et al. teaches in FIG. 1 to use the frequency tuning apparatus in a transmission system comprising a receiving unit.

Regarding claims 20-21, Krol et al. teaches in col. 4, lines 16-18 that the odd channels and even channels being out of phase by π (or a multiple of π).

4. Claims 3, 15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. and Krol as applied to claims 1-2, 5-14, 17-21, 23-24 and 27-28 above, and further in view of Chen et al. (U.S. Patent 6,005,995).

Berger et al. and Krol have been discussed above in regard to claims 1-2, 5-14, 17-21, 23-24 and 27-28. The difference between Berger et al. and Krol and the claimed invention is that Berger et al. and Krol do not teach a birefringent element including a plurality of birefringent segments. Chen et al. teaches in FIG. 9A a device for use with frequency tuner or locker to discriminate wavelength. It comprises of a plurality of birefringent segments. One of ordinary skill in the art would have motivated to combine the teaching of Chen et al. with the modified frequency tuner and locker of Berger et al. and Krol et al. because the device of Chen et al. can be used for controlling ITU frequencies (see col. 4, lines 25-30). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a birefringent element including a plurality of birefringent segments, as taught by Chen et al., in the modified frequency tuner and locker of Berger et al. and Krol et al. because the device of Chen et al. can be used for controlling ITU frequencies.

5. Claims 4, 16 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. and Krol as applied to claims 1-2, 5-14, 17-21, 23-24 and 27-28 above, and further in view of Chang et al. (U.S. Patent 6,335,830 B1).

Berger et al. and Krol have been discussed above in regard to claims 1-2, 5-14, 17-21, 23-24 and 27-28. The difference between Berger et al. and Krol and the claimed invention is that

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Berger et al. and Krol do not teach a thermally compensated birefringent element. Chang et al. teaches in col. 6, lines 1-11 a thermally stable birefringent element comprising two segments each of which is of different material for compensating thermal effect of each other. One of ordinary skill in the art would have been motivated to combine the teaching of Chang et al. with the modified frequency tuner and locker of Berger et al. and Krol et al. because the birefringent assembly of Chang et al. provides improved thermal stability over a range of operating temperature. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a thermally stable birefringent element comprising two segments each of which is of different material for compensating thermal effect of each other, as taught by Chang et al., in the modified frequency tuner and locker of Berger et al. and Krol et al. because the birefringent assembly of Chang et al. provides improved thermal stability over a range of operating temperature.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. and Krol as applied to claims 1-2, 5-14, 17-21, 23-24 and 27-28 above, and further in view of Ukaji et al. (U.S. Patent 6,804,468 B1).

Berger et al. and Krol have been discussed above in regard to claims 1-2, 5-14, 17-21, 23-24 and 27-28. The difference between Berger et al. and Krol and the claimed invention is that Berger et al. and Krol do not teach a transceiver. However, it is well known in the art to use transceiver to support bi-directional traffic. For example, Ukaji et al. teaches in FIG. 2 transceiver 5 or transmitter/receiver pair 7 and 8 to support bi-directional traffic. One of ordinary skill in the art would have been motivated to combine the teaching of Ukaji et al. with the modified frequency tuner and locker of Berger et al. and Krol et al. because most traffic in

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telecommunication and data communication is bi-directional. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include transceiver, as taught by Ukaji et al., in the modified frequency tuner and locker of Berger et al. and Krol et al. because most traffic in telecommunication and data communication is bi-directional.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Myatt et al. (U.S. Patent 6,621,580 B2) discloses a wavelength locker using interferometric optical element.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

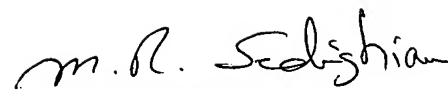
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19 October 2004

A handwritten signature in cursive script, reading "M. R. Sedighian".

**M. R. SEDIGHIAN
PRIMARY EXAMINER**